SEQUENCE LISTING

<110> CELL SIGNALING TECHNOLOGY, INC.
POLAKIEWICZ, Roberto
LI, Yu
WU, Jiong

<120> ANTIBODIES SPECIFIC FOR PHOSPHORYLATED IRS-1/2 (Ser1101/Ser1149) AND USES THE REOF

<130> CST-209

<140> Not yet assigned
<141> 2003-10-28

<150> US 60/422,409
<151> 2002-10-30

<160> 11

<170> PatentIn version 3.1

<210> 1
<211> 1242
<212> PRT
<213> Homo sapiens

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Met Ala Ser Pro Pro Glu Ser Asp Gly Phe Ser Asp Val Arg Lys Val
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Gly Tyr Leu Arg Lys Pro Lys Ser Met His Lys Arg Phe Phe Val Leu
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Arg Ala Ala Ser Glu Ala Gly Gly Pro Ala Arg Leu Glu Tyr Tyr Glu
35 40 45

Asn Glu Lys Lys Trp Arg His Lys Ser Ser Ala Pro Lys Arg Ser Ile
50 55 60

Pro Leu Glu Ser Cys Phe Asn Ile Asn Lys Arg Ala Asp Ser Lys Asn
65 70 75 80

Lys His Leu Val Ala Leu Tyr Thr Arg Asp Glu His Phe Ala Ile Ala
85 90 95

Ala Asp Ser Glu Ala Glu Gln Asp Ser Trp Tyr Gln Ala Leu Leu Gln
100 105 110

Leu His Asn Arg Ala Lys Gly His His Asp Gly Ala Ala Ala Leu Gly
115 120 125

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Ala Gly Gly Gly Gly Gly Ser Cys Ser Gly Ser Ser Gly Leu Gly Glu
    130                 135                 140

Ala Gly Glu Asp Leu Ser Tyr Gly Asp Val Pro Pro Gly Pro Ala Phe
145                 150                 155                 160

Lys Glu Val Trp Gln Val Ile Leu Lys Pro Lys Gly Leu Gly Gln Thr
                165                 170                 175

Lys Asn Leu Ile Gly Ile Tyr Arg Leu Cys Leu Thr Ser Lys Thr Ile
            180                 185                 190

Ser Phe Val Lys Leu Asn Ser Glu Ala Ala Ala Val Val Leu Gln Leu
        195                 200                 205

Met Asn Ile Arg Arg Cys Gly His Ser Glu Asn Phe Phe Phe Ile Glu
    210                 215                 220

Val Gly Arg Ser Ala Val Thr Gly Pro Gly Glu Phe Trp Met Gln Val
225                 230                 235                 240

Asp Asp Ser Val Val Ala Gln Asn Met His Glu Thr Ile Leu Glu Ala
                245                 250                 255

Met Arg Ala Met Ser Asp Glu Phe Arg Pro Arg Ser Lys Ser Gln Ser
            260                 265                 270

Ser Ser Asn Cys Ser Asn Pro Ile Ser Val Pro Leu Arg Arg His His
        275                 280                 285

Leu Asn Asn Pro Pro Pro Ser Gln Val Gly Leu Thr Arg Arg Ser Arg
    290                 295                 300

Thr Glu Ser Ile Thr Ala Thr Ser Pro Ala Ser Met Val Gly Gly Lys
305                 310                 315                 320

Pro Gly Ser Phe Arg Val Arg Ala Ser Ser Asp Gly Glu Gly Thr Met
                325                 330                 335

Ser Arg Pro Ala Ser Val Asp Gly Ser Pro Val Ser Pro Ser Thr Asn
            340                 345                 350

Arg Thr His Ala His Arg His Arg Gly Ser Ala Arg Leu His Pro Pro
        355                 360                 365
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Leu Asn His Ser Arg Ser Ile Pro Met Pro Ala Ser Arg Cys Ser Pro
    370                 375                 380

Ser Ala Thr Ser Pro Val Ser Leu Ser Ser Ser Ser Thr Ser Gly His
385                 390                 395                 400

Gly Ser Thr Ser Asp Cys Leu Phe Pro Arg Arg Ser Ser Ala Ser Val
                405                 410                 415

Ser Gly Ser Pro Ser Asp Gly Gly Phe Ile Ser Ser Asp Glu Tyr Gly
            420                 425                 430

Ser Ser Pro Cys Asp Phe Arg Ser Ser Phe Arg Ser Val Thr Pro Asp
        435                 440                 445

Ser Leu Gly His Thr Pro Pro Ala Arg Gly Glu Glu Glu Leu Ser Asn
    450                 455                 460

Tyr Ile Cys Met Gly Gly Lys Gly Pro Ser Thr Leu Thr Ala Pro Asn
465                 470                 475                 480

Gly His Tyr Ile Leu Ser Arg Gly Gly Asn Gly His Arg Cys Thr Pro
                485                 490                 495

Gly Thr Gly Leu Gly Thr Ser Pro Ala Leu Ala Gly Asp Glu Ala Ala
            500                 505                 510

Ser Ala Ala Asp Leu Asp Asn Arg Phe Arg Lys Arg Thr His Ser Ala
        515                 520                 525

Gly Thr Ser Pro Thr Ile Thr His Gln Lys Thr Pro Ser Gln Ser Ser
    530                 535                 540

Val Ala Ser Ile Glu Glu Tyr Thr Glu Met Met Pro Ala Tyr Pro Pro
545                 550                 555                 560

Gly Gly Gly Ser Gly Gly Arg Leu Pro Gly His Arg His Ser Ala Phe
                565                 570                 575

Val Pro Thr Arg Ser Tyr Pro Glu Glu Gly Leu Glu Met His Pro Leu
            580                 585                 590

Glu Arg Arg Gly Gly His His Arg Pro Asp Ser Ser Thr Leu His Thr
        595                 600                 605
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Asp Asp Gly Tyr Met Pro Met Ser Pro Gly Val Ala Pro Val Pro Ser
    610                 615                 620

Gly Arg Lys Gly Ser Gly Asp Tyr Met Pro Met Ser Pro Lys Ser Val
625                 630                 635                 640

Ser Ala Pro Gln Gln Ile Ile Asn Pro Ile Arg Arg His Pro Gln Arg
                645                 650                 655

Val Asp Pro Asn Gly Tyr Met Met Met Ser Pro Ser Gly Gly Cys Ser
            660                 665                 670

Pro Asp Ile Gly Gly Gly Pro Ser Ser Ser Ser Ser Ser Ser Asn Ala
        675                 680                 685

Val Pro Ser Gly Thr Ser Tyr Gly Lys Leu Trp Thr Asn Gly Val Gly
    690                 695                 700

Gly His His Ser His Val Leu Pro His Pro Lys Pro Pro Val Glu Ser
705                 710                 715                 720

Ser Gly Gly Lys Leu Leu Pro Cys Thr Gly Asp Tyr Met Asn Met Ser
                725                 730                 735

Pro Val Gly Asp Ser Asn Thr Ser Ser Pro Ser Asp Cys Tyr Tyr Gly
            740                 745                 750

Pro Glu Asp Pro Gln His Lys Pro Val Leu Ser Tyr Tyr Ser Leu Pro
        755                 760                 765

Arg Ser Phe Lys His Thr Gln Arg Pro Gly Glu Pro Glu Glu Gly Ala
    770                 775                 780

Arg His Gln His Leu Arg Leu Ser Thr Ser Ser Gly Arg Leu Leu Tyr
785                 790                 795                 800

Ala Ala Thr Ala Asp Asp Ser Ser Ser Ser Thr Ser Ser Asp Ser Leu
                805                 810                 815

Gly Gly Gly Tyr Cys Gly Ala Arg Leu Glu Pro Ser Leu Pro His Pro
            820                 825                 830

His His Gln Val Leu Gln Pro His Leu Pro Arg Lys Val Asp Thr Ala
        835                 840                 845
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```
Ala Gln Thr Asn Ser Arg Leu Ala Arg Pro Thr Arg Leu Ser Leu Gly
    850                 855                 860

Asp Pro Lys Ala Ser Thr Leu Pro Arg Ala Arg Glu Gln Gln Gln Gln
865                 870                 875                 880

Gln Gln Pro Leu Leu His Pro Pro Glu Pro Lys Ser Pro Gly Glu Tyr
                885                 890                 895

Val Asn Ile Glu Phe Gly Ser Asp Gln Ser Gly Tyr Leu Ser Gly Pro
            900                 905                 910

Val Ala Phe His Ser Ser Pro Ser Val Arg Cys Pro Ser Gln Leu Gln
        915                 920                 925

Pro Ala Pro Arg Glu Glu Glu Thr Gly Thr Glu Glu Tyr Met Lys Met
    930                 935                 940

Asp Leu Gly Pro Gly Arg Arg Ala Ala Trp Gln Glu Ser Thr Gly Val
945                 950                 955                 960

Glu Met Gly Arg Leu Gly Pro Ala Pro Pro Gly Ala Ala Ser Ile Cys
                965                 970                 975

Arg Pro Thr Arg Ala Val Pro Ser Ser Arg Gly Asp Tyr Met Thr Met
            980                 985                 990

Gln Met Ser Cys Pro Arg Gln Ser  Tyr Val Asp Thr Ser  Pro Ala Ala
        995                 1000                1005

Pro Val  Ser Tyr Ala Asp Met  Arg Thr Gly Ile Ala  Ala Glu Glu
    1010                1015                1020

Val Ser  Leu Pro Arg Ala Thr  Met Ala Ala Ala Ser  Ser Ser Ser
    1025                1030                1035

Ala Ala  Ser Ala Ser Pro Thr  Gly Pro Gln Gly Ala  Ala Glu Leu
    1040                1045                1050

Ala Ala  His Ser Ser Leu Leu  Gly Gly Pro Gln Gly  Pro Gly Gly
    1055                1060                1065

Met Ser  Ala Phe Thr Arg Val  Asn Leu Ser Pro Asn  Arg Asn Gln
    1070                1075                1080
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Ser Ala Lys Val Ile Arg Ala Asp Pro Gln Gly Cys Arg Arg Arg
1085 1090 1095

His Ser Ser Glu Thr Phe Ser Ser Thr Pro Ser Ala Thr Arg Val
1100 1105 1110

Gly Asn Thr Val Pro Phe Gly Ala Gly Ala Ala Val Gly Gly Gly
1115 1120 1125

Gly Gly Ser Ser Ser Ser Ser Glu Asp Val Lys Arg His Ser Ser
1130 1135 1140

Ala Ser Phe Glu Asn Val Trp Leu Arg Pro Gly Glu Leu Gly Gly
1145 1150 1155

Ala Pro Lys Glu Pro Ala Lys Leu Cys Gly Ala Ala Gly Gly Leu
1160 1165 1170

Glu Asn Gly Leu Asn Tyr Ile Asp Leu Asp Leu Val Lys Asp Phe
1175 1180 1185

Lys Gln Cys Pro Gln Glu Cys Thr Pro Glu Pro Gln Pro Pro Pro
1190 1195 1200

Pro Pro Pro Pro His Gln Pro Leu Gly Ser Gly Glu Ser Ser Ser
1205 1210 1215

Thr Arg Arg Ser Ser Glu Asp Leu Ser Ala Tyr Ala Ser Ile Ser
1220 1225 1230

Phe Gln Lys Gln Pro Glu Asp Arg Gln
1235 1240

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<212> PRT
<213> Homo sapiens

<400> 2

Met Ala Ser Pro Pro Arg His Gly Pro Pro Gly Pro Ala Ser Gly Asp
1 5 10 15

Gly Pro Asn Leu Asn Asn Asn Asn Asn Asn Asn Asn His Ser Val Arg
20 25 30

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Lys Cys Gly Tyr Leu Arg Lys Gln Lys His Gly His Lys Arg Phe Phe
        35                  40                  45

Val Leu Arg Gly Pro Gly Ala Gly Gly Asp Lys Ala Thr Ala Gly Gly
    50                  55                  60

Gly Ser Ala Pro Gln Pro Pro Arg Leu Glu Tyr Tyr Glu Ser Glu Lys
65                  70                  75                  80

Asn Trp Arg Ser Lys Ala Gly Ala Pro Lys Arg Val Ile Ala Leu Asp
                85                  90                  95

Cys Cys Leu Asn Ile Asn Lys Arg Ala Asp Pro Lys His Lys Tyr Leu
            100                 105                 110

Ile Ala Leu Tyr Thr Lys Asp Glu Tyr Phe Ala Val Ala Ala Glu Asn
        115                 120                 125

Glu Gln Glu Gln Glu Gly Trp Tyr Arg Ala Leu Thr Asp Leu Val Ser
    130                 135                 140

Glu Gly Arg Ala Ala Ala Gly Asp Ala Pro Pro Ala Ala Ala Pro Ala
145                 150                 155                 160

Ala Ser Cys Ser Ala Ser Leu Pro Gly Ala Val Gly Gly Ser Ala Gly
                165                 170                 175

Ala Ala Gly Ala Glu Asp Ser Tyr Gly Leu Val Ala Pro Ala Thr Ala
            180                 185                 190

Ala Tyr Arg Glu Val Trp Gln Val Asn Leu Lys Pro Lys Gly Leu Gly
        195                 200                 205

Gln Ser Lys Asn Leu Thr Gly Val Tyr Arg Leu Cys Leu Ser Ala Arg
    210                 215                 220

Thr Ile Gly Phe Val Lys Leu Asn Cys Glu Gln Pro Ser Val Thr Leu
225                 230                 235                 240

Gln Leu Met Asn Ile Arg Arg Cys Gly His Ser Asp Ser Phe Phe Phe
                245                 250                 255

Ile Glu Val Gly Arg Ser Ala Val Thr Gly Pro Gly Glu Leu Trp Met
            260                 265                 270
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Gln Ala Asp Asp Ser Val Val Ala Gln Asn Ile His Glu Thr Ile Leu
        275                 280                 285

Glu Ala Met Lys Ala Leu Lys Glu Leu Phe Glu Phe Arg Pro Arg Ser
    290                 295                 300

Lys Ser Gln Ser Ser Gly Ser Ser Ala Thr His Pro Ile Ser Val Pro
305                 310                 315                 320

Gly Ala Arg Arg His His His Leu Val Asn Leu Pro Pro Ser Gln Thr
                325                 330                 335

Gly Leu Val Arg Arg Ser Arg Thr Asp Ser Leu Ala Ala Thr Pro Pro
            340                 345                 350

Ala Ala Lys Cys Ser Ser Cys Arg Val Arg Thr Ala Ser Glu Gly Asp
        355                 360                 365

Gly Gly Ala Ala Ala Gly Ala Ala Ala Ala Gly Ala Arg Pro Val Ser
    370                 375                 380

Val Ala Gly Ser Pro Leu Ser Pro Gly Pro Val Arg Ala Pro Leu Ser
385                 390                 395                 400

Arg Ser His Thr Leu Ile Gly Gly Cys Arg Ala Ala Gly Thr Lys Trp
                405                 410                 415

His Cys Phe Pro Ala Gly Gly Gly Leu Gln His Ser Arg Ser Met Ser
            420                 425                 430

Met Pro Val Glu His Leu Pro Pro Ala Ala Thr Ser Pro Gly Ser Leu
        435                 440                 445

Ser Ser Ser Ser Asp His Gly Trp Gly Ser Tyr Pro Pro Pro Pro Gly
    450                 455                 460

Pro His Pro Leu Leu Pro His Pro Leu His His Gly Pro Gly Gln Arg
465                 470                 475                 480

Pro Ser Ser Gly Ser Ala Ser Ala Ser Gly Ser Pro Ser Asp Pro Gly
                485                 490                 495

Phe Met Ser Leu Asp Glu Tyr Gly Ser Ser Pro Gly Asp Leu Arg Ala
            500                 505                 510
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Phe Cys Ser His Arg Ser Asn Thr Pro Glu Ser Ile Ala Glu Thr Pro
515 520 525

Pro Ala Arg Asp Gly Gly Gly Gly Gly Glu Phe Tyr Gly Tyr Met Thr
530 535 540

Met Asp Arg Pro Leu Ser His Cys Gly Arg Ser Tyr Arg Arg Val Ser
545 550 555 560

Gly Asp Ala Ala Gln Asp Leu Asp Arg Gly Leu Arg Lys Arg Thr Tyr
565 570 575

Ser Leu Thr Thr Pro Ala Arg Gln Arg Pro Val Pro Gln Pro Ser Ser
580 585 590

Ala Ser Leu Asp Glu Tyr Thr Leu Met Arg Ala Thr Phe Ser Gly Ser
595 600 605

Ala Gly Arg Leu Cys Pro Ser Cys Pro Ala Ser Ser Pro Lys Val Ala
610 615 620

Tyr His Pro Tyr Pro Glu Asp Tyr Gly Asp Ile Glu Ile Gly Ser His
625 630 635 640

Arg Ser Ser Ser Ser Asn Leu Gly Ala Asp Asp Gly Tyr Met Pro Met
645 650 655

Thr Pro Gly Ala Ala Leu Ala Gly Ser Gly Ser Gly Ser Cys Arg Ser
660 665 670

Asp Asp Tyr Met Pro Met Ser Pro Ala Ser Val Ser Ala Pro Lys Gln
675 680 685

Ile Leu Gln Pro Arg Ala Ala Ala Ala Ala Ala Ala Ala Val Pro Phe
690 695 700

Ala Gly Pro Ala Gly Pro Ala Pro Thr Phe Ala Ala Gly Arg Thr Phe
705 710 715 720

Pro Ala Ser Gly Gly Gly Tyr Lys Ala Ser Ser Pro Ala Glu Ser Ser
725 730 735

Pro Glu Asp Ser Gly Tyr Met Arg Met Trp Cys Gly Ser Lys Leu Ser
740 745 750

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Met Glu His Ala Asp Gly Lys Leu Leu Pro Asn Gly Asp Tyr Leu Asn
        755                 760                 765

Val Ser Pro Ser Asp Ala Val Thr Thr Gly Thr Pro Pro Asp Phe Phe
    770                 775                 780

Ser Ala Ala Leu His Pro Gly Gly Glu Pro Leu Arg Gly Val Pro Gly
785                 790                 795                 800

Cys Cys Tyr Ser Ser Leu Pro Arg Ser Tyr Lys Ala Pro Tyr Thr Cys
                805                 810                 815

Gly Gly Asp Ser Asp Gln Tyr Val Leu Met Ser Ser Pro Val Gly Arg
            820                 825                 830

Ile Leu Glu Glu Glu Arg Leu Glu Pro Gln Ala Thr Pro Gly Pro Thr
        835                 840                 845

Gln Ala Ala Ser Ala Phe Gly Ala Gly Pro Thr Gln Pro Pro His Pro
    850                 855                 860

Val Val Pro Ser Pro Val Arg Pro Ser Gly Gly Arg Pro Glu Gly Phe
865                 870                 875                 880

Leu Gly Gln Arg Gly Arg Ala Val Arg Pro Thr Arg Leu Ser Leu Glu
                885                 890                 895

Gly Leu Pro Ser Leu Pro Ser Met His Glu Tyr Pro Leu Pro Pro Glu
            900                 905                 910

Pro Lys Ser Pro Gly Glu Tyr Ile Asn Ile Asp Phe Gly Glu Pro Gly
        915                 920                 925

Ala Arg Leu Ser Pro Pro Ala Pro Pro Leu Leu Ala Ser Ala Ala Ser
    930                 935                 940

Ser Ser Ser Leu Leu Ser Ala Ser Ser Pro Ala Leu Ser Leu Gly Ser
945                 950                 955                 960

Gly Thr Pro Gly Thr Ser Ser Asp Ser Arg Gln Arg Ser Pro Leu Ser
                965                 970                 975

Asp Tyr Met Asn Leu Asp Phe Ser Ser Pro Lys Ser Pro Lys Pro Gly
            980                 985                 990
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Ala Pro Ser Gly His Pro Val Gly  Ser Leu Asp Gly Leu  Leu Ser Pro
       995                1000                1005

Glu Ala  Ser Ser Pro Tyr Pro  Pro Leu Pro Pro Arg  Pro Ser Ala
    1010                1015                1020

Ser Pro  Ser Ser Ser Leu Gln  Pro Pro Pro Pro Pro  Pro Ala Pro
    1025                1030                1035

Gly Glu  Leu Tyr Arg Leu Pro  Pro Ala Ser Ala Val  Ala Thr Ala
    1040                1045                1050

Gln Gly  Pro Gly Ala Ala Ser  Ser Leu Ser Ser Asp  Thr Gly Asp
    1055                1060                1065

Asn Gly  Asp Tyr Thr Glu Met  Ala Phe Gly Val Ala  Ala Thr Pro
    1070                1075                1080

Pro Gln  Pro Ile Ala Ala Pro  Pro Lys Pro Glu Ala  Ala Arg Val
    1085                1090                1095

Ala Ser  Pro Thr Ser Gly Val  Lys Arg Leu Ser Leu  Met Glu Gln
    1100                1105                1110

Val Ser  Gly Val Glu Ala Phe  Leu Gln Ala Ser Gln  Pro Pro Asp
    1115                1120                1125

Pro His  Arg Gly Ala Lys Val  Ile Arg Ala Asp Pro  Gln Gly Gly
    1130                1135                1140

Arg Arg  Arg His Ser Ser Glu  Thr Phe Ser Ser Thr  Thr Thr Val
    1145                1150                1155

Thr Pro  Val Ser Pro Ser Phe  Ala His Asn Pro Lys  Arg His Asn
    1160                1165                1170

Ser Ala  Ser Val Glu Asn Val  Ser Leu Arg Lys Ser  Ser Glu Gly
    1175                1180                1185

Gly Val  Gly Val Gly Pro Gly  Gly Gly Asp Glu Pro  Pro Thr Ser
    1190                1195                1200

Pro Arg  Gln Leu Gln Pro Ala  Pro Pro Leu Ala Pro  Gln Gly Arg
    1205                1210                1215
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Pro Trp Thr Pro Gly Gln Pro Gly Gly Leu Val Gly Cys Pro Gly
1220 1225 1230

Ser Gly Gly Ser Pro Met Arg Arg Glu Thr Ser Ala Gly Phe Gln
1235 1240 1245

Asn Gly Leu Lys Tyr Ile Ala Ile Asp Val Arg Glu Glu Pro Gly
1250 1255 1260

Leu Pro Pro Gln Pro Gln Pro Pro Pro Pro Pro Leu Pro Gln Pro
1265 1270 1275

Gly Asp Lys Ser Ser Trp Gly Arg Thr Arg Ser Leu Gly Gly Leu
1280 1285 1290

Ile Ser Ala Val Gly Val Gly Ser Thr Arg Gly Gly Cys Gly Gly
1295 1300 1305

Pro Gly Pro Gly Ala Pro Ala Pro Cys Pro Thr Thr Tyr Ala Gln
1310 1315 1320

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<212> PRT
<213> Mus musculus

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Gly Tyr Leu Arg Lys Pro Lys Ser Met His Lys Arg Phe Phe Val Leu
20 25 30

Arg Ala Ala Ser Glu Ala Gly Gly Pro Ala Arg Leu Glu Tyr Tyr Glu
35 40 45

Asn Glu Lys Lys Trp Arg His Lys Ser Ser Ala Pro Lys Arg Ser Ile
50 55 60

Pro Leu Glu Ser Cys Phe Asn Ile Asn Lys Arg Ala Asp Ser Lys Asn
65 70 75 80

Lys His Leu Val Ala Leu Tyr Thr Arg Asp Glu His Phe Ala Ile Ala

85 90 95

Ala Asp Ser Glu Ala Glu Gln Asp Ser Trp Tyr Gln Ala Leu Leu Gln
100 105 110

Leu His Asn Arg Ala Lys Ala His His Asp Gly Ala Gly Gly Gly Cys
115 120 125

Gly Gly Ser Cys Ser Gly Ser Ser Gly Val Gly Glu Ala Gly Glu Asp
130 135 140

Leu Ser Tyr Asp Thr Gly Pro Gly Pro Ala Phe Lys Glu Val Trp Gln
145 150 155 160

Val Ile Leu Lys Pro Lys Gly Leu Gly Gln Thr Lys Asn Leu Ile Gly
165 170 175

Ile Tyr Arg Leu Cys Leu Thr Ser Lys Thr Ile Ser Phe Val Lys Leu
180 185 190

Asn Ser Glu Ala Ala Ala Val Val Leu Gln Leu Met Asn Ile Arg Arg
195 200 205

Cys Gly His Ser Glu Asn Phe Phe Phe Ile Glu Val Gly Arg Ser Ala
210 215 220

Val Thr Gly Pro Gly Glu Phe Trp Met Gln Val Asp Asp Ser Val Val
225 230 235 240

Ala Gln Asn Met His Glu Thr Ile Leu Glu Ala Met Arg Ala Met Ser
245 250 255

Asp Glu Phe Arg Pro Arg Ser Lys Ser Gln Ser Ser Ser Ser Cys Ser
260 265 270

Asn Pro Ile Ser Val Pro Leu Arg Arg His His Leu Asn Asn Pro Pro
275 280 285

Pro Ser Gln Val Gly Leu Thr Arg Arg Ser Arg Thr Glu Ser Ile Thr
290 295 300

Ala Thr Ser Pro Ala Ser Met Val Gly Gly Lys Pro Gly Ser Phe Arg
305 310 315 320

Val Arg Ala Ser Ser Asp Gly Glu Gly Thr Met Ser Arg Pro Ala Ser

325 330 335

Val Asp Gly Ser Pro Val Ser Pro Ser Thr Asn Arg Thr His Ala His
340 345 350

Arg His Arg Gly Ser Ser Arg Leu His Pro Pro Leu Asn His Ser Arg
355 360 365

Ser Ile Pro Met Pro Ser Ser Arg Cys Ser Pro Ser Ala Thr Ser Pro
370 375 380

Val Ser Leu Ser Ser Ser Ser Thr Ser Gly His Gly Ser Thr Ser Asp
385 390 395 400

Cys Leu Phe Pro Arg Arg Ser Ser Ala Ser Val Ser Gly Ser Pro Ser
405 410 415

Asp Gly Gly Phe Ile Ser Ser Asp Glu Tyr Gly Ser Ser Pro Cys Asp
420 425 430

Phe Arg Ser Ser Phe Arg Ser Val Thr Pro Asp Ser Leu Gly His Thr
435 440 445

Pro Pro Ala Arg Gly Glu Glu Glu Leu Ser Asn Tyr Ile Cys Met Gly
450 455 460

Gly Lys Gly Ala Ser Thr Leu Ala Ala Pro Asn Gly His Tyr Ile Leu
465 470 475 480

Ser Arg Gly Gly Asn Gly His Arg Tyr Ile Pro Gly Ala Asn Leu Gly
485 490 495

Thr Ser Pro Ala Leu Pro Gly Asp Glu Ala Ala Gly Ala Ala Asp Leu
500 505 510

Asp Asn Arg Phe Arg Lys Arg Thr His Ser Ala Gly Thr Ser Pro Thr
515 520 525

Ile Ser His Gln Lys Thr Pro Ser Gln Ser Ser Val Ala Ser Ile Glu
530 535 540

Glu Tyr Thr Glu Met Met Pro Ala Ala Tyr Pro Pro Gly Gly Gly Ser
545 550 555 560

Gly Gly Arg Leu Pro Gly Tyr Arg His Ser Ala Phe Val Pro Thr His

565 570 575

Ser Tyr Pro Glu Glu Gly Leu Glu Met His His Leu Glu Arg Arg Gly
580 585 590

Gly His His Arg Pro Asp Thr Ser Asn Leu His Thr Asp Asp Gly Tyr
595 600 605

Met Pro Met Ser Pro Gly Val Ala Pro Val Pro Ser Asn Arg Lys Gly
610 615 620

Asn Gly Asp Tyr Met Pro Met Ser Pro Lys Ser Val Ser Ala Pro Gln
625 630 635 640

Gln Ile Ile Asn Pro Ile Arg Arg His Pro Gln Arg Val Asp Pro Asn
645 650 655

Gly Tyr Met Met Met Ser Pro Ser Gly Ser Cys Ser Pro Asp Ile Gly
660 665 670

Gly Gly Ser Ser Ser Ser Ser Ser Ile Ser Ala Ala Pro Ser Gly Ser
675 680 685

Ser Tyr Gly Lys Pro Trp Thr Asn Gly Val Gly Gly His His Thr His
690 695 700

Ala Leu Pro His Ala Lys Pro Pro Val Glu Ser Gly Gly Gly Lys Leu
705 710 715 720

Leu Pro Cys Thr Gly Asp Tyr Met Asn Met Ser Pro Val Gly Asp Ser
725 730 735

Asn Thr Ser Ser Pro Ser Glu Cys Tyr Tyr Gly Pro Glu Asp Pro Gln
740 745 750

His Lys Pro Val Leu Ser Tyr Tyr Ser Leu Pro Arg Ser Phe Lys His
755 760 765

Thr Gln Arg Pro Gly Glu Pro Glu Glu Gly Ala Arg His Gln His Leu
770 775 780

Arg Leu Ser Ser Ser Ser Gly Arg Leu Arg Tyr Thr Ala Thr Ala Glu
785 790 795 800

Asp Ser Ser Ser Ser Thr Ser Ser Asp Ser Leu Gly Gly Gly Tyr Cys

805 810 815

Gly Ala Arg Pro Glu Ser Ser Leu Thr His Pro His His His Val Leu
820 825 830

Gln Pro His Leu Pro Arg Lys Val Asp Thr Ala Ala Gln Thr Asn Ser
835 840 845

Arg Leu Ala Arg Pro Thr Arg Leu Ser Leu Gly Asp Pro Lys Ala Ser
850 855 860

Thr Leu Pro Arg Val Arg Glu Gln Gln Gln Gln Gln Gln Ser Ser Leu
865 870 875 880

His Pro Pro Glu Pro Lys Ser Pro Gly Glu Tyr Val Asn Ile Glu Phe
885 890 895

Gly Ser Gly Gln Pro Gly Tyr Leu Ala Gly Pro Ala Thr Ser Arg Ser
900 905 910

Ser Pro Ser Val Arg Cys Pro Pro Gln Leu His Pro Ala Pro Arg Glu
915 920 925

Glu Thr Gly Ser Glu Glu Tyr Met Asn Met Asp Leu Gly Pro Gly Arg
930 935 940

Arg Ala Thr Trp Gln Glu Ser Gly Gly Val Glu Leu Gly Arg Ile Gly
945 950 955 960

Pro Ala Pro Pro Gly Ser Ala Thr Val Cys Arg Pro Thr Arg Ser Val
965 970 975

Pro Asn Ser Arg Gly Asp Tyr Met Thr Met Gln Ile Gly Cys Pro Arg
980 985 990

Gln Ser Tyr Val Asp Thr Ser Pro Val Ala Pro Val Ser Tyr Ala Asp
995 1000 1005

Met Arg Thr Gly Ile Ala Ala Glu Lys Ala Ser Leu Pro Arg Pro
1010 1015 1020

Thr Gly Ala Ala Pro Pro Pro Ser Ser Thr Ala Ser Ser Ser Val
1025 1030 1035

Thr Pro Gln Gly Ala Thr Ala Glu Gln Ala Thr His Ser Ser Leu

1040 1045 1050

Leu Gly Gly Pro Gln Gly Pro Gly Gly Met Ser Ala Phe Thr Arg
1055 1060 1065

Val Asn Leu Ser Pro Asn His Asn Gln Ser Ala Lys Val Ile Arg
1070 1075 1080

Ala Asp Thr Gln Gly Cys Arg Arg Arg His Ser Ser Glu Thr Phe
1085 1090 1095

Ser Ala Pro Thr Arg Ala Gly Asn Thr Val Pro Phe Gly Ala Gly
1100 1105 1110

Ala Ala Val Gly Gly Ser Gly Gly Gly Gly Gly Gly Gly Ser Glu
1115 1120 1125

Asp Val Lys Arg His Ser Ser Ala Ser Phe Glu Asn Val Trp Leu
1130 1135 1140

Arg Pro Gly Asp Leu Gly Gly Val Ser Lys Glu Ser Ala Pro Val
1145 1150 1155

Cys Gly Ala Ala Gly Gly Leu Glu Lys Ser Leu Asn Tyr Ile Asp
1160 1165 1170

Leu Asp Leu Ala Lys Glu Arg Ser Gln Asp Cys Pro Ser Gln Gln
1175 1180 1185

Gln Ser Leu Pro Pro Pro Pro Pro His Gln Pro Leu Gly Ser Asn
1190 1195 1200

Glu Gly Asn Ser Pro Arg Arg Ser Ser Glu Asp Leu Ser Asn Tyr
1205 1210 1215

Ala Ser Ile Ser Phe Gln Lys Gln Pro Glu Asp Arg Gln
1220 1225 1230

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<212> PRT
<213> Mus musculus

<400> 4

Met Ala Ser Ala Pro Leu Pro Gly Pro Pro Ala Ser Gly Gly Gly Asp
1 5 10 15

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Gly Pro Asn Leu Asn Asn Asn Asn Asn Asn Asn Asn His Ser Val Arg
            20                  25                  30

Lys Cys Gly Tyr Leu Arg Lys Gln Lys His Gly His Lys Arg Phe Phe
        35                  40                  45

Val Leu Arg Gly Pro Gly Thr Gly Gly Asp Glu Ala Ser Ala Ala Gly
    50                  55                  60

Gly Ser Pro Pro Gln Pro Pro Arg Leu Glu Tyr Tyr Glu Ser Glu Lys
65                  70                  75                  80

Lys Trp Arg Ser Lys Ala Gly Ala Pro Lys Arg Val Ile Ala Leu Asp
                85                  90                  95

Cys Cys Leu Asn Ile Asn Lys Arg Ala Asp Ala Lys His Lys Tyr Leu
            100                 105                 110

Ile Ala Leu Tyr Thr Lys Asp Glu Tyr Phe Ala Val Ala Ala Glu Asn
        115                 120                 125

Glu Gln Glu Gln Glu Gly Trp Tyr Arg Ala Leu Thr Asp Leu Val Ser
    130                 135                 140

Glu Gly Arg Ser Gly Glu Gly Gly Ser Gly Thr Thr Gly Gly Ser Cys
145                 150                 155                 160

Ser Ala Ser Leu Pro Gly Val Leu Gly Gly Ser Ala Gly Ala Ala Gly
                165                 170                 175

Cys Asp Asp Asn Tyr Gly Leu Val Thr Pro Ala Thr Ala Val Tyr Arg
            180                 185                 190

Glu Val Trp Gln Val Asn Leu Lys Pro Lys Gly Leu Gly Gln Ser Lys
        195                 200                 205

Asn Leu Thr Gly Val Tyr Arg Leu Cys Leu Ser Ala Arg Thr Ile Gly
    210                 215                 220

Phe Val Lys Leu Asn Cys Glu Gly Pro Ser Val Thr Leu Gln Leu Asn
225                 230                 235                 240

Asn Ile Arg Arg Cys Gly His Ser Asp Ser Phe Phe Phe Ile Glu Val
                245                 250                 255
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Gly Arg Ser Ala Val Thr Gly Pro Gly Glu Leu Trp Met Gln Ala Asp
260 265 270

Asp Ser Val Val Ala Gln Asn Ile His Glu Thr Ile Leu Glu Ala Met
275 280 285

Lys Ala Leu Lys Glu Leu Phe Glu Phe Arg Pro Arg Ser Lys Ser Gln
290 295 300

Ser Ser Gly Ser Ser Ala Thr His Pro Ile Ser Val Pro Gly Ala Arg
305 310 315 320

Arg His His His Leu Val Asn Leu Pro Pro Ser Gln Thr Gly Leu Val
325 330 335

Arg Arg Ser Arg Thr Asp Ser Leu Ala Ala Thr Pro Pro Ala Ala Lys
340 345 350

Cys Thr Ser Cys Arg Val Arg Thr Ala Ser Glu Gly Asp Gly Gly Ala
355 360 365

Ala Gly Gly Ala Gly Thr Ala Gly Gly Arg Pro Met Ser Val Ala Gly
370 375 380

Ser Pro Leu Ser Pro Gly Pro Val Arg Ala Pro Leu Ser Arg Ser His
385 390 395 400

Thr Leu Ser Ala Gly Cys Gly Gly Arg Pro Ser Lys Val Thr Leu Ala
405 410 415

Pro Ala Gly Gly Ala Leu Gln His Ser Arg Ser Asn Ser Met Pro Val
420 425 430

Ala His Ser Pro Pro Ala Ala Thr Ser Pro Gly Ser Leu Ser Ser Ser
435 440 445

Ser Gly His Gly Ser Gly Ser Tyr Pro Leu Pro Pro Gly Ser His Pro
450 455 460

His Leu Pro His Pro Leu His His Pro Gln Gly Gln Arg Pro Ser Ser
465 470 475 480

Gly Ser Ala Ser Ala Ser Gly Ser Pro Ser Asp Pro Gly Phe Met Ser
485 490 495

Leu Asp Glu Tyr Gly Ser Ser Pro Gly Asp Leu Arg Ala Phe Ser Ser
500 505 510

His Arg Ser Asn Thr Pro Glu Ser Ile Ala Glu Thr Pro Pro Ala Arg
515 520 525

Asp Gly Ser Gly Gly Glu Leu Tyr Gly Tyr Met Ser Met Asp Arg Pro
530 535 540

Leu Ser His Cys Gly Arg Pro Tyr Arg Arg Val Ser Gly Asp Gly Ala
545 550 555 560

Gln Asp Leu Asp Arg Gly Leu Arg Lys Arg Thr Tyr Ser Leu Thr Thr
565 570 575

Pro Ala Arg Gln Arg Gln Val Pro Gln Pro Ser Ser Ala Ser Leu Asp
580 585 590

Glu Tyr Thr Leu Met Arg Ala Thr Phe Ser Gly Ser Ser Gly Arg Leu
595 600 605

Cys Pro Ser Phe Pro Ala Ser Ser Pro Lys Val Ala Tyr Asn Pro Tyr
610 615 620

Pro Glu Asp Tyr Gly Asp Ile Glu Ile Gly Ser His Lys Ser Ser Ser
625 630 635 640

Ser Asn Leu Gly Ala Asp Asp Gly Tyr Met Pro Met Thr Pro Gly Ala
645 650 655

Ala Leu Arg Ser Gly Gly Pro Asn Ser Cys Lys Ser Asp Asp Tyr Met
660 665 670

Pro Met Ser Pro Thr Ser Val Ser Ala Pro Lys Gln Ile Leu Gln Pro
675 680 685

Arg Leu Ala Ala Ala Leu Pro Pro Ser Gly Ala Ala Val Pro Ala Pro
690 695 700

Pro Ser Gly Val Gly Arg Thr Phe Pro Val Asn Gly Gly Gly Tyr Lys
705 710 715 720

Ala Ser Ser Pro Ala Glu Ser Ser Pro Glu Asp Ser Gly Tyr Met Arg
725 730 735

Met Trp Cys Gly Ser Lys Leu Ser Met Glu Asn Pro Asp Pro Lys Leu
740 745 750

Leu Pro Asn Gly Asp Tyr Leu Asn Lys Ser Pro Ser Glu Ala Gly Thr
755 760 765

Ala Gly Thr Pro Pro Asp Phe Ser Ala Ala Leu Arg Gly Gly Ser Glu
770 775 780

Gly Leu Lys Gly Ile Pro Gly His Cys Tyr Ser Ser Leu Pro Arg Ser
785 790 795 800

Tyr Lys Ala Pro Cys Ser Cys Ser Gly Asp Asn Asp Gln Tyr Val Leu
805 810 815

Met Ser Ser Pro Val Gly Arg Ile Leu Glu Glu Glu Arg Leu Glu Pro
820 825 830

Gln Ala Thr Pro Gly Ala Gly Thr Phe Gly Ala Ala Gly Gly Ser His
835 840 845

Thr Gln Pro His His Ser Ala Val Pro Ser Ser Met Arg Pro Ser Ala
850 855 860

Ile Gly Gly Arg Pro Glu Gly Phe Leu Gly Gln Arg Cys Arg Ala Val
865 870 875 880

Arg Pro Thr Arg Leu Ser Leu Glu Gly Leu Gln Thr Leu Pro Ser Met
885 890 895

Gln Glu Tyr Pro Leu Pro Thr Glu Pro Lys Ser Pro Gly Glu Tyr Ile
900 905 910

Asn Ile Asp Pro Gly Glu Ala Gly Thr Arg Leu Ser Pro Pro Ala Pro
915 920 925

Pro Leu Leu Ala Ser Ala Ala Ser Ser Ser Ser Leu Leu Ser Ala Ser
930 935 940

Ser Pro Ala Ser Ser Leu Gly Ser Gly Thr Pro Gly Thr Ser Ser Asp
945 950 955 960

Ser Arg Gln Arg Ser Pro Leu Ser Asp Tyr Met Asn Leu Asp Pro Ser
965 970 975

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Ser Pro Lys Ser Pro Lys Pro Ser Thr Arg Ser Gly Asp Thr Val Gly
          980                 985                 990

Ser Met Asp Gly Leu Leu Ser Pro  Glu Ala Ser Ser Pro  Tyr Pro Pro
       995                1000                1005

Leu Pro  Pro Arg Pro Ser Thr  Ser Pro Ser Ser Leu  Gln Gln Pro
    1010                1015                1020

Leu Pro  Pro Ala Pro Gly Asp  Leu Tyr Arg Leu Pro  Pro Ala Ser
    1025                1030                1035

Ala Ala  Thr Ser Gln Gly Pro  Thr Ala Gly Ser Ser  Met Ser Ser
    1040                1045                1050

Glu Pro  Gly Asp Asn Gly Asp  Tyr Ser Glu Met Ala  Phe Gly Val
    1055                1060                1065

Ala Ala  Thr Pro Pro Gln Pro  Ile Val Ala Pro Pro  Lys Pro Glu
    1070                1075                1080

Gly Ala  Arg Val Ala Ser Pro  Thr Ser Gly Leu Lys  Arg Leu Ser
    1085                1090                1095

Leu Met  Asp Gln Val Ser Gly  Val Glu Ala Phe Leu  Gln Val Ser
    1100                1105                1110

Gln Pro  Pro Asp Pro His Arg  Gly Ala Lys Val Ile  Arg Ala Asp
    1115                1120                1125

Pro Gln  Gly Gly Arg Arg Arg  His Ser Ser Glu Thr  Phe Ser Ser
    1130                1135                1140

Thr Thr  Thr Val Thr Pro Val  Ser Pro Ser Phe Ala  His Asn Ser
    1145                1150                1155

Lys Arg  His Asn Ser Ala Ser  Val Glu Asn Val Ser  Leu Arg Lys
    1160                1165                1170

Ser Ser  Glu Gly Ser Ser Thr  Leu Gly Gly Gly Asp  Glu Pro Pro
    1175                1180                1185

Thr Ser  Pro Gly Gln Ala Gln  Pro Leu Val Ala Val  Pro Pro Val
    1190                1195                1200
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Pro Gln  Ala Arg Pro Trp Asn  Pro Gly Gln Pro Gly  Ala Leu Ile
    1205                 1210                 1215

Gly Cys  Pro Gly Gly Ser Ser  Ser Pro Met Arg Arg  Glu Thr Ser
    1220                 1225                 1230

Val Gly  Phe Gln Asn Gly Leu  Asn Tyr Ile Ala Ile  Asp Val Arg
    1235                 1240                 1245

Gly Glu  Gln Gly Ser Leu Ala  Gln Ser Gln Pro Gln  Pro Gly Asp
    1250                 1255                 1260

Lys Asn  Ser Trp Ser Arg Thr  Arg Ser Leu Gly Gly  Leu Leu Gly
    1265                 1270                 1275

Thr Val  Gly Gly Ser Gly Ala  Ser Gly Val Cys Gly  Gly Pro Gly
    1280                 1285                 1290

Thr Gly  Ala Leu Pro Ser Ala  Ser Thr Tyr Ala Ser  Ile Asp Phe
    1295                 1300                 1305

Leu Ser  His His Leu Lys Glu  Ala Thr Val Val Lys  Glu
    1310                 1315                 1320
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<212> PRT
<213> Homo sapiens

<220>
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<223> PHOSPHORYLATION; serine at position 8 is phosphorylated

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1 5 10 15

<210> 10

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<400> 11

Cys Arg Arg Arg His Ser Ser Glu Thr Phe Ser Ser Thr
1 5 10